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The Journal

of the

Southern Appalachian Botanical Club

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The Genus *Rubus* in West Virginia*

H. A. DAVIS AND TYRECCA DAVIS

There are considerable differences of opinion among students of the genus *Rubus* in eastern North America. In their recent treatments of the genus, Bailey^{1, 2, 3} and Fernald,⁴ while both are quite liberal in the number of species accepted, differ greatly in the location of specific lines. Such differences of opinion indicate a need for further study in the field, in controlled plantings, in the herbarium, and in the laboratory.

In the present paper, we find it possible to drop a few species previously credited to West Virginia.^{4, 5} We also find it necessary to add several species not previously reported from our area, and to describe nine new species. The type specimens of these new species are deposited in the West Virginia University Herbarium.

The work is based chiefly on our private collections, and on the collections in the West Virginia University Herbarium. A trip was made to Ithaca, where we spent several days studying the extensive *Rubus* collections in the Herbarium of the Bailey Hortorium, with the cooperation of Miss Ethel Bailey and other members of the Hortorium staff.

In the following pages, eighty species of *Rubus* are credited to West Virginia. We do not see how any satisfactory disposition of the material at hand can be made with fewer species. We have no doubt but that further study will justify some combinations. On the other hand, more than one hundred of the 1700 sheets of *Rubus* in our private collection remain unclassified. Some of these undoubtedly represent known species not yet credited to the state, and others will

*Contribution No. 66 from the Herbarium of West Virginia University.

probably necessitate the addition of new species. Most of the unidentified specimens fall in a few difficult and variable groups, such as the *flagellaris-cordialis-vixalacer* group in section *Flagellares*, and in the *bellobatus-pulchrislorus-miriflorus-senilis* group in section *Arguti*. Much more work remains to be done in these groups.

We wish to express our appreciation to Dr. L. H. Bailey for identifying many specimens for us, and for encouraging us in our study of *Rubus*; to Professor Earl L. Core, head of the Department of Biology at West Virginia University, for his encouragement and assistance in the preparation of this report; and to Miss Marguerite Givens for her care in making the drawings for the illustrations.

In the preparation of the following key, free use was made of the excellent keys prepared by Bailey.¹ We realize that the present key will fail in many cases, but we hope that those who may wish to study *Rubus* in West Virginia will find it helpful.

Key to the West Virginia Species of Rubus

- A. Plant entirely unarmed; no definite primocane-floricane succession.
 - B. Plant herbaceous, the flowering stems annual, slender, trailing; stipules broad, attached to stem; flowers 1 cm. or less across Subgenus I. CYLACTIS
 - B. Plant shrubby, the stems becoming woody, with flaky bark; stipules on petioles; flowers large, purple, 3-5 cm. across. Subgenus II. ANAPLOBATUS
 - A. Plant usually armed (the "thornless" blackberries usually have a few prickles on some parts of the plant); definite primocane-floricane succession (except in one or two well armed introduced species).
 - B. Fruit thimble-like, the core remaining on the bush. Raspberries Subgenus III. IDAEOBATUS
 - B. Fruit with a core. Blackberries and Dewberries. Subgenus IV. EUBATUS
- Subgenus I. CYLACTIS. A single species in West Virginia.
 1. *R. pubescens*.
- Subgenus II. ANAPLOBATUS. A single species in West Virginia 2. *R. odoratus*

Subgenus III. IDAEOBATUS

- A. Plant mostly 1-2 m. tall, with definite primocane-floricane succession; primocane leaves 3-7 foliolate; flowers 1-2 cm. across.
- B. Inflorescence racemiform or cymiform; calyx-lobes spreading or reflexed under the developing fruit; native species.
 - C. Canes arching, rooting at tips; primocanes not bristly nor glandular, armed with rather stout, hooked prickles; ripe fruit normally black 3. *R. occidentalis*
 - C. Canes erect, not rooting at tip; primocanes bristly and glandular, without hooked prickles; ripe fruit red.
..... 4. *R. strigosus*
- B. Inflorescence paniculiform; calyx-lobes becoming erect and enveloping the developing fruit; canes covered with red, gland-tipped hairs; introduced. 5. *R. phoenicolasius*
- A. Plant less than 1 m. tall, with annual canes; leaves pinnate, 5-9 foliolate; flowers white and showy, 3-4 cm. across; introduced.
..... 6. *R. illecebrosus*

Subgenus IV. EUBATUS

- A. Main flower clusters racemiform, cymiform, or ascendate, not paniculiform.
- B. Plants bearing hispid hairs or bristles or slender setose prickles on canes or pedicels or both; no broad-based nor hooked prickles. Northern species, in West Virginia confined to mountains.
 - C. Floricanes and mature primocanes habitually trailing, or perhaps arching near the base, but trailing for a considerable portion of the length; freely tip-rooting.
..... Section 1. HISPIDI
 - C. Floricanes and primocanes erect or ascending, not trailing along the ground; seldom tip-rooting.
..... Section 2. SETOSI
- B. Plants not bearing hispid hairs or bristles or slender setose prickles on canes or pedicels; thorns broad-based, or occasionally none.

- C. Floricanes and mature primocanes habitually trailing, or perhaps arching near the base, but trailing for a considerable portion of the length; freely tip-rooting.

..... Section 3. FLAGELLARES

- C. Floricanes and primocanes erect or ascending, usually not tip-rooting; if occasionally so, not trailing along the ground.

- D. Inflorescence, and often petioles and canes, bearing numerous and prominent glandular hairs.

..... Section 5. ALLEGHENIENSES

- D. Inflorescence and other parts not prominently glandular. (Some species of ARGUTI have a few small glands on some pedicels).

- E. Leaves glabrous, often shining, especially near the tip of growing primocane.

..... Section 4. CANADENSES

- E. Leaves variously pubescent, not shining.

..... Section 6. ARGUTI

- A. Main flower clusters paniculiform; leaflets lacinate or parted; flowers pink; introduced Section 7. SYLVATICI

Section 1. HISPIDI. Groundberries

- A. Plants slender; main primocane axis mostly 1-3 mm. in diameter, not particularly glandular nor shaggy; the hispid hairs, when present, 1-2 mm. long.

- B. Leaflets broad, the terminal primocane leaflet more than two-thirds as broad as long, broadest above the middle.

- C. Primocane leaflets rhombic, tapering to a point, but with nearly straight edges. 11. *R. vagulus*

- C. Primocane leaflets thick, coriaceous, glossy, crenate-serrate, obtuse, or with short, blunt points.

..... 7. *R. hispidus*.

- C. Primocane leaflets thin, sharply serrate, abruptly acuminate. 8. *R. Huttonii*.

- B. Leaflets narrow, the terminal primocane leaflets less than two-thirds as broad as long, tapering both ways from about the middle. 9. *R. Davisiorum*.

- A. Plants robust; main primocane axis 5-8 mm. in diameter, shaggy, the hispid hairs 2-4 mm. long, many of them gland-tipped.
- B. Primocane leaflets gradually long-acuminate to sharp points.
..... 10. *R. zaplutus*
- B. Primocane leaves not gradually long-acuminate.
 - C. Primocane leaflets rhombic, tapering to a point, but with nearly straight edges. 11. *R. vagulus*
 - C. Primocane leaflets almost circular, round at the apex, or with very short points. 12. *R. orbicularis*.

Section 2. SETOSE Bristleberries

- A. Canes hispid, without true prickles; not sharp to the finger.
 - B. Leaflets deeply dentate, teeth about 3 per cm.
..... 13. *R. notatus*.
 - B. Leaflets shallowly serrate, teeth about 5 per cm. . 14. *R. Ribes*
- A. Canes armed with slender prickles that are decidedly sharp to the finger.
 - B. Primocane leaves glabrous or slightly pubescent underneath, not velvety to the touch.
 - C. Primocane leaves 5-foliolate; leaflets deeply serrate, the teeth narrow and acuminate. 15. *R. discretus*.
 - C. Primocane leaves mostly 3-foliolate; leaflets shallowly dentate, the teeth as broad as long, not acuminate.
..... 16. *R. nocivus*
 - B. Primocane leaves soft-velvety to the touch underneath.
 - C. Primocane leaves mostly 3-foliolate, the terminal one at least two-thirds as broad as long. (16. *R. nocivus*.)
 - C. Primocane leaves 5-foliolate, the terminal one less than two-thirds as broad as long.
 - D. Primocane leaflets more than twice as long as broad; inflorescence leafy almost to the top.
..... 17. *R. angustifolius*.
 - D. Primocane leaflets less than twice as long as broad; inflorescence leafy only at the base. 18. *R. racemiger*

Section 3. FLAGELLARES. Dewberries

- A. Pedicels, and other parts of plant, glandless, or nearly so.
 - B. Under surface of primocane leaves not soft-velvety to the touch.
 - C. Inflorescence ascendate, without a definite central axis; pedicels usually attached far apart, elongate, and nearly parallel; flowers, if single, held well above the foliage on long peduncles.
 - D. Inflorescence several (2-6)-flowered.
 - E. Primocane leaves mostly 5-foliolate. (Often 3-foliolate early in the season, and on late season branches.)
 - F. Primocane leaves shiny, their acuminate teeth longer than broad. . . . 19. *R. flagellaris*.
 - F. Primocane leaves dull, their obtuse or merely mucronate teeth as broad as long. . . . 20. *R. Jaysmithii*.
 - E. Primocane leaves mostly 3-foliolate. (Sometimes 4- or imperfectly 5-foliolate on exceptionally vigorous canes.)
 - F. Terminal primocane leaflet cordate at base; inflorescence 1-4-flowered. . . . 21. *R. dives*.
 - F. Terminal primocane leaflet not cordate at base.
 - G. Plant small and slender, about 1 m. long, with small primocane leaflets, the terminal one about 4 (3-5) cm. long. . . . 22. *R. cordialis*.
 - G. Plant and leaflets larger.
 - H. Primocane leaflets abruptly acuminate; prickles few and rather evenly spaced.

- I. Leaves glabrous or nearly so underneath; pedicels slender, nearly glabrous, mostly 1-4 cm. long, the flowers scarcely exceeding the leaves.
..... 23. *R. vixalacer*
- I. Leaves pubescent underneath, at least along the veins (not necessarily soft-velvety); pedicels stout, decidedly pubescent, 4-8 cm. long, the flowers definitely exceeding the leaves. 24. *R. celer*.
- H. Primocane leaflets scarcely if at all acuminate; the many small hooked prickles unevenly spaced (bunched). 25. *R. fecundus*.
- D. Inflorescence mostly single (sometimes 2-3)-flowered.
 - E. Terminal primocane leaflet cordate; inflorescence often 2-4-flowered. (21. *R. dives*.)
 - E. Terminal primocane leaflet not cordate; flowers single (very rarely 2-3) 26. *R. connixus*).
- C. Inflorescence racemiform or cymiform, with a continuing axis; if single-flowered, the short peduncle not exceeding the leaves.
 - D. Inflorescence racemiform, longer than broad, extending well above the foliage; mountain species.
 - E. Pedicels without prickles.
 - F. Primocane leaves thinly pubescent underneath, with hooked prickles on midribs; prickles on primocane straight, reflexed, 3-5 mm. long. 27. *R. clandestinus*.
 - F. Primocane leaves entirely glabrous; no prickles on midribs; prickles on primocane curved, 1-2 cm. long. . (50. *R. canaanensis*.)

- E. Pedicels prickly; primocane leaflets long-acuminate.
..... (49. *R. montensis*.)
- D. Inflorescence cymiform, about as broad as long, scarcely
if at all exceeding the foliage.
- E. Inflorescence single (sometimes 2-3)-flowered.
 - F. Primocane leaves mostly 3-foliolate; terminal
primocane leaflet scarcely if at all acuminate.
 - G. Prickles none, or few and weak; leaves
thin; pedicels without prickles.
..... 28. *R. Enslenii*.
 - G. Prickles many, stout, hooked; pedicels
prickly. 29. *R. Sailorii*.
 - F. Primocane leaves mostly 5-foliolate; leaflets ab-
ruptly acuminate. 30. *R. uniflorifer*.
 - E. Inflorescence several (4-10)-flowered.
 - F. Flower cluster containing narrow, slender-point-
ed leaves; primocane leaflets deeply and sharply
cut-toothed; prickles few, straight.
..... 31. *R. pronus*.
 - F. Flower cluster not containing narrow, slender-
pointed leaves; the flowers in close clusters with
broad leaves; primocane leaflets with ordinary
serrations; prickles many, slender, curved.
..... 32. *R. varus*.
- B. Under surface of primocane leaves soft-velvety to the touch.
 - C. Inflorescence ascendate (as explained under C, above).
 - D. Terminal primocane leaflet broadest below the middle,
cordate or subcordate when well developed.
 - E. Central primocane leaflet long pointed, but scarce-
ly acuminate, the edges nearly straight; flowers
several; vigorous, productive berry.
..... 33. *R. voribaccus*.
 - E. Central primocane leaflet definitely acuminate;
flowers mostly solitary.

- F. Petioles and pedicels mostly unarmed.
..... 34. *R. particularis*.
- F. Petioles and pedicels armed with slender, hooked prickles. 35. *R. ignarus*.
- D. Terminal primocane leaflet broadest at or above the middle, rounded or tapered at base.
 - E. Inflorescence several-flowered.
 - F. Primocane leaves mostly 5-foliolate; terminal petiole nearly half as long as its leaflet.
..... 36. *R. injunctus*.
 - F. Primocane leaves mostly 3-foliolate; terminal petiole less than a third as long as its leaflet.
..... (24. *R. celer*.)
 - E. Inflorescence mostly single-flowered.
 - F. Petioles and pedicels mostly unarmed.
..... (34. *R. particularis*)
 - F. Petioles and pedicels armed with slender, hooked prickles. (35. *R. ignarus*.)
- C. Inflorescence racemiform or cymiform with a continuing axis.
 - D. Inflorescence racemiform, longer than broad.
 - E. Inflorescence not leafy, extending well beyond the foliage. (27. *R. clandestinus*.)
 - E. Inflorescence leafy; most pedicels from the axils of trifoliolate or simple leaves; inflorescence about equalling the foliage. 37. *R. cacaponensis*.
 - D. Inflorescence cymiform, about as broad as long.
 - E. Plants long-trailing.
 - F. Terminal primocane leaflet cordate at base, abruptly short-acuminate; primocane leaves with scattered, short, appressed, white hairs on upper surface.
..... 38. *R. cordifrons*.
 - F. Terminal primocane leaflet rounded or subcordate at base, gradually long-acuminate; leaves glabrous above. 39. *R. inobvius*.

- E. Plants short-arching. (76. *R. tygartensis*.)
- A. Pedicels, and often other parts of plant, with abundant stalked glands.
 - B. Main primocane axis glandless, except possibly near the tip.
 - C. Primocane leaves not soft-velvety to the touch underneath.
 - D. Primocane leaves 3-foliolate 40. *R. Rosagnetis*.
 - D. Primocane leaflets mostly 5-foliolate. 41. *R. terraltanus*.
 - C. Primocane leaves soft-velvety to the touch underneath.
 - D. Primocane leaves mostly 3-foliolate. 42. *R. Masseyi*.
 - D. Primocane leaves 5-foliolate.
 - E. Terminal primocane leaflet rounded or subcordate at base; dentations broad and shallow, the upper half of the abruptly acuminate tip mostly entire. 43. *R. Macdanielsii*.
 - E. Terminal primocane leaflet decidedly cordate at base; serrations sharp, extending well up the abruptly acuminate tip. 44. *R. exsularis*.
 - B. Main primocane axis decidedly glandular.
 - C. Primocane leaflets broadest below the middle; plants light green. 45. *R. Sharpii*.
 - C. Primocane leaflets broadest above the middle; plants dark, with a purplish cast 46. *R. vegrandis*.

Section 4. CANADENSES. Smooth or Mountain Blackberries

- A. Plants upright; tall, vigorous, productive blackberries.
 - B. Canes thornless, or nearly so; primocane leaflets broadest below the middle, long acuminate; the terminal primocane leaflet cordate or subcordate at base 47. *R. canadensis*

- B. Canes well armed; primocane leaflets broadest above the middle, short pointed, rounded or tapered at base.
..... 48. *R. monongaliensis*.
- A. Plants arching or mounding, freely rooting at the tips, resembling glabrous, shiny-leaved *Flagellares*; high mountains.
 - B. Prickles on primocane slender, straight, reflexed, 3-4 mm. long; pedicels prickly; primocane leaflets broadest below the middle, long-acuminate. 49. *R. montensis*.
 - B. Prickles on primocane hooked, 1-2 mm. long; pedicels without prickles; primocane leaflets broadest above the middle, short-acuminate. 50. *R. canaanensis*.

Section 5. ALLEGHENIENSES Copsy Highbush Blackberries.

- A. Primocane axis glandless, or nearly so.
 - B. Inflorescence long-racemiform, held well above the foliage.
 - C. Thorns on canes well developed and broad-based, 3-7 mm. long. 51. *R. allegheniensis*.
 - C. Thorns on canes absent, or slender and not broad-based.
..... 52. *R. uber*.
 - B. Inflorescence short-racemiform, about equaling the foliage.
 - C. Primocane leaflets, or at least the terminal one, distinctly cordate at base, broadest below the middle; inflorescence clearly short-racemiform.
 - D. Primocane leaflets all very broad and overlapping, short-acuminate; branches never pendulous.
..... 53. *R. Rosa*.
 - D. Primocane leaflets narrowly long-acuminate, the terminal one twice as long as broad; primocanes erect or arching, often developing long pendulous branches with flagellate tips which sometimes root late in the season 54. *R. concameratus*.
 - C. Primocane leaflets rounded at base, or the terminal one somewhat cordate; terminal leaflet broadest above the middle; lower pedicels of the short-racemiform in-

- florescence elongated so as to produce a cymiform effect.
 55. *R. apianus*.
- A. Primocane axis abundantly provided with stalked glands among the prickles.
- B. Prickles heavy and strong, the broad bases sometimes united, giving the appearance of double-pronged thorns; foliage gray-pubescent. 56. *R. pugnax*
- B. Prickles slender and weak, not united at base; foliage not noticeably gray-pubescent.
- C. Inflorescence short-racemiform or cymiform, about as broad as long; the two basal primocane leaflets elliptic or ovate, not acuminate; primocane prickles long, slender, almost setose. 57. *R. veranus*.
- C. Inflorescence long-racemiform, definitely longer than broad; the two basal primocane leaflets lanceolate, acuminate; primocane prickles short and slender, but with broad bases. 58. *R. Fryei*.

Section 6. ARGUT. Field Highbush Blackberries.

- A. Mature primocane leaflets long and narrow, at least twice as long as broad, long-acuminate, tapered at base; floricanes leaflets also narrow
- B. Terminal primocane leaflet broadest at or below the middle.
- C. Thorns on primocanes weak and curved, 2-4 mm. long; primocane leaflets sharply and rather deeply serrate.
 59. *R. argutus*.
- C. Thorns on primocanes strong and straight, 3-6 mm. long; primocane leaflets acutely but finely serrate.
 60. *R. interioris*.
- B. Terminal primocane leaflet broadest well above the middle.
 61. *R. Jennisonii*.
- A. Mature primocane leaflets broad, the terminal one much less than twice as long as broad, rounded to cordate at base; floricanes leaflets also broad.

B. Inflorescence, when well developed, definitely racemiform; when short, the lower pedicels not particularly elongated.

C. Inflorescence long-racemiform, leafy.

D. Plants large, 2 m. and more tall; inflorescence extending well above the foliage; thorns not particularly numerous.

E. Flowers large, often 4-5 cm. across; primocane leaflets broad, usually overlapping; the terminal one broadly cordate and prominently acuminate; thorns large. 62. *R. bellobatus*.

E. Flowers small, 1.5-2 cm. across; primocane leaflets rather narrow, seldom overlapping, the terminal one narrowly cordate at base and gradually tapered to the apex; thorns few and small. 63. *R. congruus*.

D. Plants small, about 1 m. tall; the flowers mostly subtended by leaves, and hidden among them; thorns slender, numerous. 64. *R. Leggii*.

C. Inflorescence short-racemiform, compact, about equalling the foliage.

D. Inflorescence leafy; vigorous, erect, gray-pubescent plant. 65. *R. senilis*.

D. Inflorescence not leafy, except at base.

E. Plant upright or arching, without long pendulous branches; thorns few and short.

F. Flowers large, 3-6 cm. across; primocane leaves rather evenly serrate, the central one rounded to cordate at base, tapered, with nearly straight edges, to the apex. 66. *R. pulchriflorus*.

F. Flowers smaller, 2-3 cm. across; primocane leaves irregularly serrate, the central one mostly tapered at base and roughly shouldered above the middle. 67. *R. condensiflorus*.

- E. Plant arching or even mounding, some of the long branches occasionally rooting; thorns plentiful, long but weak and slender on primocanes. 68. *R. miriflorus*.
- B. Inflorescence, when well developed, about as broad as long; lower pedicels elongated, producing a cymiform effect.
 - C. Inflorescence mostly exceeding the associated foliage.
 - D. Floral leaflets and simple leaves narrow and decidedly acute or acuminate, mostly broadest near the middle; terminal primocane leaflet broadest near the middle.
 - E. Plants vigorous, mostly 1-2 m. tall; primocane leaflets abruptly acuminate. 69. *R. pensilvanicus*.
 - E. Plants low and much branched, less than 1 m. tall; primocane leaflets gradually acuminate. 70. *R. humilior*.
 - D. Floral leaflets and simple leaves nearly as broad as long, broadest well above the middle, obtuse or abruptly pointed; terminal primocane leaflet broadest near base.
 - E. Primocane leaves sharply and deeply cut-serate; terminal leaflet gradually long-pointed. 71. *R. philadelphicus*.
 - E. Primocane leaves with close, shallow serrations; terminal leaflet abruptly short-acuminate. 72. *R. abactus*.
 - C. Inflorescence about equaling the associated foliage, or exceeded by it.
 - D. Thorns many, straight or curved, 2-4 mm. apart along the middle portion of the cane; leaflets somewhat ashy-gray underneath.
 - E. Primocane leaflets overlapping, at least two-thirds as broad as long; some pedicels with a few glands; petals broad, overlapping, long-persistent after withering. . . 73. *R. prestonensis*

- E. Primocane leaflets not overlapping, less than two-thirds as broad as long; inflorescence glandless; petals narrow, not persistent.
 - F. Primocane leaflets broadest well above the middle, abruptly acuminate. 74. *R. rosarius*
 - F. Primocane leaflets broadest near or below the middle, gradually somewhat acuminate or tapered. 75. *R. densissimus*.
- D. Thorns not so plentiful, mostly more than 4 mm. apart; leaves pubescent, but not ashy-gray underneath.
 - E. Canes arching and the branches often rooting; *Arguti-Flagellares* intermediates.
 - F. Plant small, short-arching; terminal petiolule and pedicels with few or no prickles. 76. *R. tygartensis*
 - F. Plant vigorous, high-arching; terminal petiolule and pedicels well armed with strong, hooked prickles. (37. *R. cacaponensis*.)
 - E. Canes upright or arching above, the branches never rooting.
 - F. Leaves large; terminal leaflet of well developed primocane leaf 6-10 cm. broad; its petiolule scarcely if at all armed 77. *R. difformis*.
 - F. Leaves small; terminal leaflet of well developed primocane leaf 3-5 cm. broad, its petiolule armed with small prickles.
 - G. Primocane leaves mostly 3-foliolate; when 5-foliolate, the terminal petiolule short, so that its leaflet overlaps the adjacent pair. 78. *R. pauper*.
 - G. Primocane leaves 5-foliolate, the terminal petiolule long, so that its leaflet stands well apart from the adjacent pair.
 - H. Plant weak and arching; prickles weak; flowers in a close cluster, none in the axils of leaves below the main cluster. 79. *R. subtentus*,

- H. Plant stiff and upright; prickles slender but strong; one or more flowers in the axils of leaves below the main cluster
 (60. *R. interioris*.)

Section 7. SYLVATICI. A single species known to be established in West Virginia. 80. *R. laciniatus*.

Subgenus I. CYLACTIS

1. *RUBUS PUBESCENS* Raf. A transcontinental northern species, in West Virginia confined to mountain swamps. Pocahontas, Preston, Randolph, and Tucker Counties.

Subgenus II. ANAPLOBATUS

2. *R. ODORATUS* L. Purple-flowering Raspberry. Cool, rocky slopes throughout the state; northeastern United States and adjacent Canada.

Subgenus III. IDAEOBATUS

3. *R. OCCIDENTALIS* L. Black Raspberry. Common throughout West Virginia; eastern United States and adjacent Canada. The fruit is often gathered in the wild. Several horticultural varieties are in cultivation. Forma *PALLIDUS* (Bailey) Robins., with yellowish or amber fruit and yellowish canes, occurs occasionally.

4. *R. STRIGOSUS* Michx. Red Raspberry. A transcontinental northern species. Confined to the high mountains in West Virginia. A small colony near Greer, Monongalia Co., is probably an escape.

5. *R. PHOENICOLASIUS* Maxim. Wineberry. introduced from east Asia, and established in many places. Specimens from Hampshire, Jefferson, Monongalia, Ohio, and Wyoming counties; observed in Webster and Wayne.

6. *R. ILLECEBROSUS* Focke. Strawberry-Raspberry. Introduced from Japan, and occasionally established. Nicholas and Tucker Counties.

Subgenus IV. EUBATUS

Section HISPIDI. Groundberries.

All species of the sections *Hispidi* and *Setosi* flower and fruit late. The small, sour fruits are never plentiful, and are not worth picking.

7. *R. HISPIDUS* L. A northern species, found throughout our mountains.

8. *R. HUTTONII* Bailey. Known only from a few stations in Randolph County (type, *Hutton*), and from a single colony in Webster Co. Its sharply serrate leaves and long slender prickles make this perhaps the most distinctive of the five species of *Hispidi* recently described from West Virginia.

9. *R. DAVISIORUM* Bailey. Known from two colonies in Preston County (type, *Davis & Davis*), and one in Garrett County, Maryland.

10. *R. VAGULUS* Bailey. Preston County (type, *Davis & Davis*), and adjacent Maryland and Pennsylvania. A colony occurs in Mountain Lake Park, Maryland, in which the flowers have 10-20 small petals.

11. *R. ZAPLUTIS* Bailey. Grant and Preston (type, *Davis & Davis*), counties, and adjacent Maryland and Pennsylvania. This is the largest of the *Hispidi* known to grow in West Virginia.

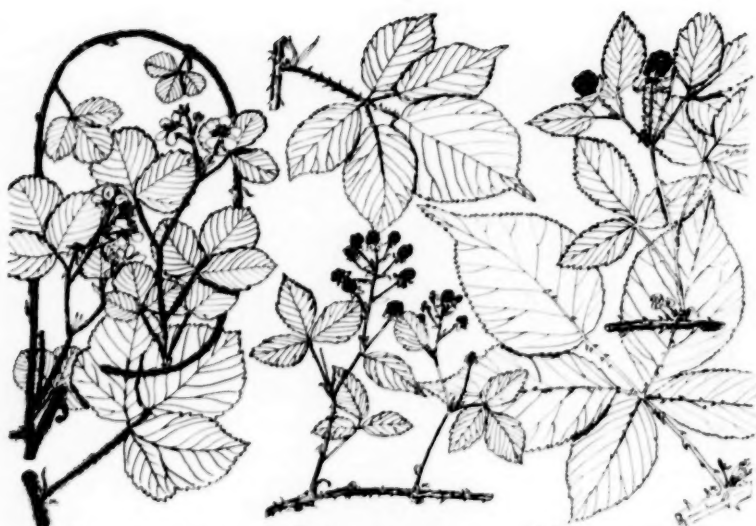
12. *R. orbicularis* spec. nov. Validus, ramosus, repens; primocani crassi, compacte setosi; foliola primocanorum 3 vel 5, glabra, nitida, lato-ovata, imbricata, dentata; foliolium terminale prope rotundum; floricani hispidi; foliola floricanorum lata, obtusa, dentata; flores pauci in inflorescentiam cymose inter folia; pedicelli setosi et glandulati.

Vigorous, branching, prostrate plant; primocane axis densely covered with weak setae and long hairs, the latter prominent and gland-tipped on young growth; primocane leaves 3- or sometimes 5-foliate, glabrous, thick and glossy, the lateral leaflets sessile, the terminal one short stalked; leaflets broad and overlapping, rounded or very short pointed at tip, rounded or subcordate at base, the terminal one especially almost circular in outline; margins dentate; armature of petioles similar to that of axis; stipules large and prominent; florican axis hispid; leaflets three, very broad, rounded at tip, rounded or somewhat tapering at base, dentate; inflorescence cymose, among the leaves; pedicels setose and glandular-hairy.

The relationship is with *R. zaplutus* and *R. vagulus*, from which it is at once distinguished by its broad, glossy leaflets.

West Virginia, near Lake Terra Alta, Preston County, *Davis & Davis* 8211 (type) 8214, 9394 (garden grown); Pennsylvania, near Markleysburg, Fayette County, 9152, 9175.

The above six species of *Hispidi*, most of them from more than one colony, have been grown in our garden for several years. They retain their characteristics well, and may be distinguished at a glance any time during the growing season. When growing in the wild under unfavorable conditions, *R. hispidus*, *R. vagulus*, and *R. zaplutus*

*Rubus orbicularis**Rubus canaanensis**Rubus cacaponensis**Rubus tygartensis**Rubus prestonensis**Rubus densissimus*

may sometimes be confused. Future collecting may show sufficient intergrading between *R. vagulus* and *R. zaplatus* to justify treating the latter as a variety of the former.

Section SETOSI. Bristleberries.

13. *R. NOTATUS* Bailey. Preston County (type, *Steele*), in several places. Also found in adjacent Maryland and Pennsylvania, with varieties in Michigan and Connecticut. Fernald⁶ includes *R. notatus* under the New England *R. setosus* Bigel. Perhaps this would not have been done had Bailey's² discussion of his recent rediscovery of *R. setosus* appeared in time to be considered by Fernald.

14. *R. RIBES* Bailey. Preston County, at Lake Terra Alta; Garrett County Maryland.

15. *R. DISCRETUS* Bailey. Known from a single colony in Tucker County (type, *Sharp & Fox*), where it grows in considerable abundance along the Blackwater River below W. Va. Route 32. Closely related to *R. Groutianus* Blanchard, a northern species of considerable range.

16. *R. NOCIVUS* Bailey. Preston County (type, *Steele*).

17. *R. ANGUSTIFOLIATUS* Bailey. Preston County (type, *Steele*). A distinctive looking plant; rather plentiful along the North Branch of Snowy Creek at Hopemont.

18. *R. RACEMIGER* Bailey. Preston County (type, *Steele*); Garrett County, Maryland. Bailey² states that *R. racemiger* is "closely related to *R. angustifolius* and perhaps an extreme variant of it; differs in axes much less hispid and less glandiferous, leaflets much broader and less acuminate, clusters more racemiform with pedicels strongly divaricate." To this we might add a much more striking difference: in *R. angustifolius* the inflorescence is extremely leafy, nearly all pedicels arising from the axils of leaves which surpass the flowers; while in *R. racemiger* the elongated racemes are practically leafless and extend well beyond the foliage. We have collected and observed both species from several colonies for several seasons, and have never noticed any intermediate forms.

The *Setosi* are decidedly northern in distribution. In West Virginia, they are known only from the flats along the branches of Snowy Creek (including the shore of Lake Terra Alta) in Preston County, and the banks of the Blackwater River in Tucker County.

Section FLAGELLARES. Dewberries.

19. *R. FLAGELLARIS* Willd. A variable species ranging over most of the eastern United States. Monongalia, Pocahontas and Preston Counties. While this species probably occurs in most parts of West

Virginia, it is, as defined by Bailey, one of our less abundant dew-berries.

20. *R. JAYSMITHII* Bailey. Monongalia County; New York, Connecticut, Pennsylvania, and Virginia. Rather common around Waynesburg, Pennsylvania. In West Virginia, probably confined to the northern counties.

21. *R. DIVES* Bailey. Pendleton and Preston (type, *Steele*) Counties.

22. *R. CORDIALIS* Bailey. Apparently throughout West Virginia; North Carolina and Virginia. Since our numerous and variable collections may include more than one species, we are not listing counties.

23. *R. VIXALACER* Bailey. Greenbrier, Hampshire, Pocahontas, Randolph, and Webster (type *Davis & Davis*) Counties; reported from Kentucky. A variable species in a difficult group.

24. *R. CELER* Bailey. Boone, Nicholas, Preston, and Webster Counties; Maryland and Virginia.

25. *R. FECUNDUS* Bailey. Monongalia and Nicholas Counties; District of Columbia, Pennsylvania, and Virginia.

26. *R. CONNIXUS* Bailey. Greenbrier, Marion, Mingo, Nicholas, Ritchie, Roane, Taylor, Tyler, Wayne, and Wetzel Counties; North Carolina and Virginia. The fruits are exceptionally large and juicy, but they occur singly or in pairs, making gathering unprofitable.

27. *R. CLANDESTINUS* Bailey. Preston (type, *Bailey*) and Tucker Counties..

28. *R. ENSLENI* Trail. Calhoun, Monongalia, Preston, and Wirt Counties; an eastern species of considerable range.

29. *R. SAILORI* Bailey. Cabell (type, *Sailor*) and Monongalia Counties. The Monongalia County material, which represents a dew-berry quite common in and around Morgantown, may be distinct.

30. *R. UNIFLORIFER* Bailey. Hancock (type, *Bailey*), Monongalia, and Tyler Counties. The inclusion of the Monongalia County specimens, collected from three different stations, is tentative, awaiting further collections from the type locality.

31. *R. PRONUS*. Nicholas, Preston, and Webster Counties; Garrett County, Maryland.

32. *R. VARUS* Bailey. Hampshire, Nicholas, Preston, and Webster Counties; Garrett County, Maryland, and Fayette County Pennsylvania. Often, in poor soil, it will spread over a considerable area from underground stolons, without tip-rooting. Under more favorable circumstances, it will tip-root freely.

33. *R. RORIBACCUS* Rydb. Barbour, Berkeley, Grant, Greenbrier, Hampshire, Monongalia, Nicholas, Pendleton, Preston, Randolph, and Tucker Counties; Kentucky. Our most productive dewberry. Plentiful and fruitful in the counties drained by the Potomac River. The Lucretia and other horticultural varieties are derived from this species.

34. *R. PARTICULARIS* Bailey. Known only from the type collection near Ivydale, Clay County (type, *Bailey*).

35. *R. IGNARUS* Bailey. Known only from one hillside in Morgantown, Monongalia County (type, *Davis & Davis*).

36. *R. INJUNCTUS* Bailey. Berkeley, Hampshire, Monongalia (type *Davis & Davis*), and Preston Counties. Quite common in some localities. One of the earliest dewberries to ripen.

37. *R. cacaponensis* spec. nov. Vigorosos, validus, eglandulosus, arcuatus et repens, radicans; aculei primocanorum gracili, 3-6 mm. longi; folia primocani 5-foliolata, pubescentia supra et subter; foliolium terminale 9-14 cm. longum, 6-8 cm. latum, truncatum vel subcordatum, acute-serratum; flores 3-6 in elongata foliosque inflorescentia; pedicelli breves, pubescentia.

Vigorous, mounding and long-running trailer, 2 m. and more long, freely rooting; primocanes puberulent; prickles straight and slender, 3-6 mm. long; petioles and petiolules pubescent and well armed with stout, hooked prickles; primocane leaves large, 5-foliolate, pubescent above and velvety underneath; terminal primocane leaflet 9-14 cm. long and 6-8 cm. wide, sharply serrate, truncate or subcordate at base, gradually short-acuminate; inflorescence elongate, 3-6-flowered, nearly every flower subtended by a mostly simple, broad, coarsely serrate, acute or acuminate leaf which exceeds the flower; pedicels pubescent, prickly, glandless.

Hampshire County, along the Cacapon River road near Capon Bridge, *Davis & Davis 8143, 8249, 8416* (type); Berkeley County near Hedgesville, *8740*.

38. *R. CORDIFRONS* Bailey. Barbour, Grant, Hampshire, Mineral, Monongalia, Nicholas, Ohio, Preston, Randolph, Webster, and Wood Counties; Maryland and Virginia. One of our most common and most productive dewberries. It probably occurs in all parts of the state except at high altitudes.

39. *R. INOBIUS* Bailey. Several stations in Preston County (type, *Steele*); Garrett County, Maryland.

40. *R. ROSAGNETIS* Bailey. Monongalia and Nicholas Counties; Kentucky.

41. *R. TERRALTANUS* Bailey. Known only from the type station north of Terra Alta, Preston County (type, *Steele*). Specimens collected by us in the same locality differ from the type.

42. *R. MASSEYI* Bailey. Grant, Jackson, Mason, Monongalia, Nicholas, Randolph, Taylor, Upshur, and Wirt Counties; Virginia.

43. *R. MACDANIELSHI* Bailey. Calhoun, Monongalia, Nicholas, Preston, and Tucker Counties; Maryland and Pennsylvania.

44. *R. EXSULARIS* Bailey. Greenbrier, Hampshire, Monongalia, Nicholas, and Webster Counties; New York. Bailey¹ described the species from presumably escaped colonies in New York, and remarked "Nativity and origin unknown, but undoubtedly American. . . . The exposed upper shoots winterkill, suggesting that the plant in New York may be beyond its natural habitat. . . . Probably it is the residuum of a former introduction of a horticultural variety possibly now, lost, and which we shall yet find in the wild." It is plentiful and undoubtedly native in the Nicholas-Webster-Greenbrier area of West Virginia. Specimens from this region match the type specimen quite well. The Hampshire County colony, a probable escape, differs somewhat, but matches some of the New York material which Bailey includes under *R. exsularis*. Perhaps this species was collected in central West Virginia and introduced into the horticultural trade at about the time the Lucretia dewberry (*R. voribaccus*) was introduced. Typical *R. exsularis* is an extremely large and vigorous plant, but the fruits are comparatively few and rather inferior in quality. The Hampshire County plants are more productive.

45. *R. SHARPI* Bailey. Preston County (type, *Sharp*); Fayette County, Pennsylvania. We collected what appears to be the same species in Otsego County, Michigan.

46. *R. VEGRANDIS* Bailey. The type of this species was collected in 1946, growing in hard-packed, sandy soil along the edge of a country road near Cranesville, Preston County, associated with *R. hispidus*. The station was destroyed the next year when the road was graded. Careful searching since then has failed to reveal other colonies of the species as typified and described by Bailey.² In 1949, we found a plant of an apparently undescribed species familiar to us growing along the same road, which had tip-rooted in the sandy roadside soil. The depauperate plants resulting (*Davis & Davis* 8749) closely resembled the type specimen of *R. vegrandis*. We believe the type of *R. vegrandis* to be such a depauperate plant. If such is the case, it is desirable that the description² be modified. The following descrip-

tion is based on our number 7366, collected from a well developed plant growing on the roadside bank a few rods from the type, 7364. Both collections were made June 13, 1946.

A vigorous, arching and tip-rooting plant; primocanes purplish, covered with slender prickles of various sizes, some of them broad based, interspersed with gland-tipped hairs; primocane leaves mostly 5-foliolate, the petioles and petiolules densely glandular-hispid and acuminate; leaflets broadest above the middle, sharply and finely serrate, acuminate at apex, the terminal one subcordate at base; leaflets glabrous above, somewhat pubescent underneath; floricanes prickly and glandular, branching; florican leaflets finely serrate, mostly obovate, somewhat cuneate at base; inflorescence mostly 6-10-flowered, long-racemiform, extending well above the foliage; pedicels setose and glandular-hairy; fruit small and sour.

Frequent in the mountains. Nicholas, Preston (type, *Davis & Davis*), Tucker, and Webster Counties; Garrett County Maryland, and Fayette County, Pennsylvania. In occasional colonies the primocane leaves are mostly 3-foliolate.

Section CANADENSES. Smooth Blackberries.

47. *R. CANADENSIS* L. Includes *R. Millspaughii* Britt. In West Virginia, confined to the mountains, where it often covers large areas. The abundant fruits ripen late. Some colonies are almost entirely thornless. Northeastern United States and adjacent Canada.

48. *R. MONONGALIENSIS* Bailey. Doddridge, Marshall, Mason, Monongalia (type, *Davis & Davis*), Jackson, Ohio, Pleasants, Preston, Taylor, Tyler, Webster, and Wetzel Counties. Common in northwestern West Virginia, especially in the valleys. The large, juicy fruits ripen early, and are of excellent quality. This species seems to be the principal source of wild blackberries collected in the vicinity of Morgantown. Selected races might provide horticultural varieties of merit.

49. *R. MONTENSIS* Bailey. Tucker County, along the Blackwater River above W. Va. Route 32; Pennsylvania.

50. *R. canaanensis* spec. nov. Primocani arcuati vel prostrati, 1 m. vel plus longi, eglandulati et glabri ubique; aculei sparsi et graciles, 1-2 mm. longi; folia primocanorum 5-foliata, glabra supra et subter, lucida; foliola ovato-elliptica, brevo-acuminata, rotunda vel subcordata; flores 10 vel pauciores, racemiformes, excedentes supra folia; pedicelli eglandulati, puberulenti.

Primocanes arching or prostrate, presumably tip-rooting, 1 m.

or more long, glandless and glabrous throughout; prickles slender and weak, hooked, 1-2 mm. long, scattered over axis, petioles, and petiolules; leaves round in outline, 12-14 cm. in diameter; leaflets lustrous, ovate-elliptic, broadest above the middle, finely serrate, short-acuminate, rounded or subcordate at base; terminal leaflet 6-8 cm. long, 4-6 cm. wide; flowers 5-10 in a racemiform inflorescence which exceeds the foliage; pedicels glandless, somewhat puberulent; calyx glabrous without, pubescent within.

Tucker County, West Virginia, growing among rocks on Canaan Mountain, *Davis & Davis 8208, 9132, 9133* (type). Collected from two stations several miles apart.

Section ALLEGHENIENSES. Copsy Blackberries.

51. *R. ALLEGHENIENSIS* Porter. A common woodland species, probably occurring in every West Virginia county. Northeastern United States and adjacent Canada. An important source of wild blackberries. Represented in cultivation by the Taylor and other varieties.

52. *R. UBER* Bailey. Berkeley, Fayette, Monongalia, Nicholas, Pocahontas, Preston, Wayne, Webster, Wetzel, and Wirt Counties; North Carolina, Virginia, and Ohio. The canes are frequently more or less glandular. Fruit usually inferior to that of *R. allegheniensis*. We include here *R. marilandicus* Bailey. We have compared the two type specimens at the Bailey Herbarium, and believe *R. marilandicus* to be a narrow leaved form of *R. uber*.

53. *R. ROSA* Bailey. Berkeley, Grant, Hampshire, Monongalia, Nicholas, Ohio, and Preston Counties; northeastern United States. Fruit abundant and of good quality. The source of the Eldorado, Lawton, Alfred and other horticultural varieties. Some of our colonies may be escapes.

54. *R. concameratus* spec. nov. Altus, multiramosus; rami primocanorum penduli et radicans; foliola primocanorum obovata, cordata, longo-acuminata, acute-serrata, pubescentia subter; petioles aculeati; inflorescentia 8-12 floribus, brevi-racemiformis; pediceli glandulares; fructus parvus.

Large, upright, branching blackberry growing in dense colonies; late in the season the numerous primocane branches produce long, pendulous, flagellate tips which root under favorable conditions; canes sparsely or moderately armed; primocane leaflets broadest near the base, gradually long-acuminate, sharply serrate; at least the terminal one cordate at base, twice as long as broad; leaflets velvety to



Rubus concameratus

Rubus Fryei



Rubus vegrandis

Rubus Leggii

the touch underneath, often somewhat pilose above; petioles, petiolules, and midribs well armed with stout, hooked prickles; petiolules often glandular; flowers 8-12 in short, very glandular, racemiform clusters about equaling the foliage; bracts large; berries small and few.

A clump of this species presents a striking appearance in September, the pendulous branches suggesting *R. occidentalis*.

Monongalia County, West Virginia; at entrance to Morgantown Country Club grounds, *Davis & Davis* 8284, 8411, 8426, 8821 (type); Willowdale Road, 8194, 8285; Highland Avenue, Morgantown, 8566; Darnell Hollow, 7385.

55. *R. APIANUS* Bailey. Barbour, Berkeley, Fayette, Hampshire, Harrison, Jackson, Mineral, Monongalia, Morgan, Nicholas, Ohio, Pleasants, Pocahontas, Preston, Wayne, and Webster Counties; North Carolina, Kentucky, and Ohio. An important source of wild fruit.

56. *R. PUNGAX* Bailey. Randolph County, on Point Mountain and along the Tygart River south of Beverly; New York and New England. Our material seems to match the type specimen quite well, although Bailey has suggested that it probably represents an undescribed species.

57. *R. RERAVUS* Bailey. Several stations in Preston County; Garrett County, Maryland.

58. *R. Fryei* spec. nov. Erectus, 1 m. vel minus altus; primocani glandulari, armati gracilibus aculeis 2-3 mm. longis; folia primocanorum 5-foliolata, glabra supra, pubescentia subter; foliolata acute-serrata, longo-acuminata; flores 10-12 vel plus in inflorescentia longo-racemiforma; pedicelli glandiferi sed non aculeati; fructus parvus.

Upright, unbranched plant, 1 m. or less tall, growing in dense colonies; primocanes glandular, bearing slender scarcely broad-based prickles 2-3 mm. long; primocane leaves mostly 5-foliolate, the four lateral leaflets nearly sessile; leaves glabrous above, pubescent underneath; primocane leaflets sharply serrate, long-acuminate, the terminal one subcordate at base, the others tapered; inflorescence 10-12 (or more)-flowered, long racemiform, leafy at base, about equaling the foliage; pedicels short, ascending, densely glandular, but without prickles; sepals strongly reflexed; fruit small.

Near Capon Bridge, Hampshire County, West Virginia, *Davis & Davis* 8558 (type). This species is named in honor of Wilbert Frye, who conducted us to the type colony.

Section ARGUT. Field Highbush Blackberries.

59. *R. ARGUTUS* Link. Preston and Randolph Counties; Virginia

to Georgia. Specimens from three localities in the above named counties agree reasonably well with authentic specimens of *R. argutus* in the herbarium of the Bailey Hortorium, although Bailey considers them to represent an undescribed species.

60. *R. INTERIORIS* Bailey. Monongalia, Ohio, Preston, and Upshur Counties; Ohio and Indiana. Probably occurs throughout the western half of West Virginia.

61. *R. JENNISONII* Bailey. Hampshire, Nicholas, and Pocahontas Counties; Tennessee.

62. *R. BELLOBATUS* Bailey. Greenbrier, Hampshire, Jackson, Monongalia, Preston, and Randolph Counties; New Jersey, New York, and Ohio. Fruit plentiful and of superior quality. Represented in cultivation by the Kittatinny blackberry. Probably some or all of our colonies are escapes.

63. *R. CONGRUUS* Bailey. Berkeley (type, *Bailey*), Cabell, Hampshire, Jackson, Marion, Mason, Monongalia, Preston, Upshur, Wayne, and Wyoming Counties; Kentucky. One of our common and fruitful blackberries. Many of our specimens have a few glands in the inflorescence.

64. *R. Leggii* spec. nov. Herba circa 1 m. alta, arcuata, implexa: aculei primocanorum multi, inclinati vel curvi, 3-5 mm. longi; petioli et petioluli aculeati: foliola primocanorum elliptica, 6-8 cm. longa, 3-5 cm. lata, acuminata, acute-serrata; glabra supra, cana-pubescentia subtus: inflorescentia racemiforma, frondosa; flores 6-10; pedicelli aculeati, summe sparsi-glandulosi.

Plants about 1 m. high, arching, in tangled colonies: thorns on primocanes abundant, slender, reflexed or hooked, 3-5 mm. long; many stout, hooked prickles on petioles, petiolules, and midribs; primocane leaflets 5, the upper three similar in size and shape, 6-8 cm. long and 3-5 cm. wide, elliptic, rounded at base, shouldered and sharply-acuminate, sharply serrate with acuminate teeth; glabrous above, gray-green velvety-pubescent underneath; floricanes leaves sharply cut-serrate; inflorescence racemiform, mostly surpassed by the foliage; many of the 6-10 flowers subtended by leaves, the upper simple leaves being long and slender, pointed at both ends; pedicels ascending, pubescent, prickly, some of them bearing a few glands.

Nicholas County, near Tioga, *Davis & Davis 8810*; Preston County, near Arthurdale, *8819*; Webster County, near Camden-on-Gauley, *7413, 7924, 8125, and 9428* (type).

This species is dedicated to the memory of the late William C

Legg, naturalist of Mount Lookout, Nicholas County, West Virginia, whom we accompanied on several pleasant and profitable field trips.

65. *R. SENILIS* Bailey. Berkeley, Calhoun, Hampshire, Mason, (type, *Bailey*), Nicholas, Randolph, and Roane Counties.

66. *R. PULCHRIFLORUS* Bailey. Calhoun, Monongalia, Preston, Randolph, Tucker, and Wetzel Counties; Virginia, Kentucky, and Ohio. Produces an abundance of excellent fruit.

67. *R. CONDENSIFLORUS* Bailey. Berkeley, Cabell, and Randolph Counties; Kentucky. Bailey has identified many of our specimens as belonging to this species, but, after comparing them with the type at the Bailey Hortorium, we wish to reserve judgment on most of them. The type was collected in Kentucky May 18, before it was properly developed.

68. *R. MIRIFLORUS* Bailey. Mingo and Preston Counties; District of Columbia, Virginia, and Kentucky.

69. *R. PENNSYLVANICUS* Poir. Cabell, Doddridge, Greenbrier, Mingo, Monongalia, Preston, Randolph, Roane and Wirt Counties; New England to Virginia. A common, variable bramble, with rather small fruits.

70. *R. HUMILIOR* Bailey. Marion and Monongalia Counties; Pennsylvania.

71. *R. PHILADELPHICUS* Blanchard. Barbour, Grant, Greenbrier, Hampshire, Mineral, Monongalia, Preston, Randolph, Webster, and Wirt Counties; Massachusetts to Virginia. Since the Lawton, one of the oldest of our cultivated blackberries, probably belongs to this species, some of our records may be from escaped colonies. Probably native only in the eastern part of the state.

72. *R. ABACTUS* Bailey. Mineral, Monongalia, and Preston Counties; northeastern United States. Very common in Ohio and Indiana, and should turn up in most of our western counties. Seems to intergrade with *R. philadelphicus* in our mountains.

73. *R. prestonensis* spec. nov. Mediocris altus, multiramis; aculei multi et recti; folia primocanorum 5-foliolata, sparsa argente-pubescentia supra, molli-pubescentia infra, margines acutissime serrati; foliola ovata, foliolium terminale circa 9 cm. longum, 6 cm. latum, plus vel minus cordatum; foliola floricani ovata, obtusa; flores 8-12 in inflorescentiam compactam latam; petala lata et imbricata, persistentia, pedicelli glandulares, sed pauci.

Medium tall, about 1.5 m., branching; primocanes strongly and abundantly armed with straight, sharp thorns 4-6 mm. long, 2-4 mm.

apart, sometimes joined at the bases; stems usually bearing reddish brown glandular particles among the thorns; primocane leaves 5-foliate, the leaflets broadly ovate, somewhat overlapping, rounded at base, the terminal one shallowly cordate, two-thirds as broad as long; margins finely and sharply serrate, gradually short-acuminate; upper surface with scattered silvery hairs, lower surface softly pubescent, giving the mature leaf a thick, felty appearance; petioles and petiolules pubescent and abundantly armed with stout, hooked prickles; stipules hairy; floricanes and their stiff, divergent branches prominently armed; leaflets broadly ovate, mostly obtuse, densely pubescent underneath; flowers 2 cm. or more across; petals broad and decidedly overlapping, long-persistent after withering; flowers 8-12 in rather close, broad clusters which somewhat exceed the foliage, quite showy; pedicels pubescent, somewhat glandular, unarmed, or bearing one or a few stout prickles; calyx-lobes pubescent, broad, short pointed, tardily reflexed.

Monongalia, Preston, Randolph, Taylor, and Upshur Counties; Fayette County, Pennsylvania. There are 59 sheets of this species in our herbarium. In parts of Preston County it is extremely abundant, and the principal source of wild blackberries. Apparently the species for which Briery Mountain was named. For type we select our number 9758 from the hill above the head of Lake Terra Alta, Preston County, West Virginia.

74. *R. ROSARIUS* Bailey. Pocahontas and Nicholas Counties; Maryland and Virginia. Supposedly a coastal plain plant, but our specimens match the type quite well.

75. *R. densissimus* spec. nov. Humilis, circa 1 m. altus, ramosus, diffusus; aculei multi, 4-6 mm. longi, recti vel curvi; folia primocanorum 5-foliata; foliola elliptica, glabra supra, pubescentia subter, breviter acuminata; margines acuti serrati; rotundi vel angusti ad basim; foliola floricanorum ovata, acuta, pubescentia subter; flores parvi, 6-8 in parvam inflorescentiam inter folia; pedicelli aculeati et eglandulosi.

Low, about 1 m., widely branching, forming dense tangled clumps; primocanes abundantly armed with sharp, straight or recurved thorns 4-6 mm. long and 2-4 mm. apart; stems glabrous, or indifferently pubescent; without glandular particles among the thorns; primocane leaflets 5, scarcely if at all overlapping, elliptic, tapering or rounded at base, not cordate, abruptly short-pointed, sharply and finely serrate, usually broadest near the tip; the terminal leaflet

about 3 by 6 cm.; leaflets mostly glabrous above, moderately pubescent underneath, thin in appearance; petioles and petiolules pubescent, and armed with hooked prickles; stipules mostly glabrous; floricanes and their slender interlacing branches prominently armed; floricanes leaflets narrowly ovate, mostly acute, pubescent underneath; flowers small, about 1.5 cm. across, petals narrow and not overlapping, not persistent; flowers 6-8 in leafy clusters, hidden among the foliage, not showy; pedicels moderately pubescent, glandless, armed with several slender prickles; calyx lobes pubescent, ovate, acuminate, tardily reflexed.

In northern West Virginia, mostly on low ground. Hampshire County, near Capon Bridge, *Davis & Davis* 8133, 8395; Monongalia County, several colonies at the Flatts, near Morgantown, 7416, 7417, 8130 (type), 8131, 8393, 8394, 9016; Preston County, west of Kingwood, 8132; near Reedsville, 8188, 8397, 8399, 9398; Taylor County, near Pruntytown, 8400, 8401.

76. *R. tygartensis* spec. nov. Humulus, arcuatus, ramosus, frequenter radicans: foliola primocani 3 vel 5; foliolium terminale lato-ellipticum, brevo-acuminatum, subcordatum; foliola supra pilosa, infra molli-pubescentia; flores circa 6 in inflorescentia cymiforma inter folia; pedicelli eglandulares et nudi; lobi calycis acuminati; fructus parvus.

Low arching *Arguti*, frequently tip-rooting; thorns slender and weak on both primocane and floricanes; primocane leaves 3-5 foliolate; terminal leaflet broadly elliptic, subcordate at base, with short-acuminate tip; primocane leaflets rather evenly serrate, softly pubescent underneath, pilose with scattered hairs above; terminal petiolule and midribs sparingly aciculate; floral branches and pedicels pubescent, glandless, and practically unarmed; flowers about 6 in close cymiform clusters among the foliage; calyx pubescent, with subulate tips; fruit small.

Taylor County, West Virginia, on bank above Webster, *Davis & Davis* 9096 (type), 9131, 9908.

77. *R. DIFFORMIS* Bailey. Collected from several localities in Preston County (type, *Steele*); Garrett County, Maryland.

78. *R. PAUPER* Bailey. Monongalia County; Connecticut and New York. When grown in the garden the plants are much larger than in the wild, where it is found in poor banks, but the jagged-serrate leaves, short leafy inflorescence, and other characteristics remain unchanged.

79. *R. SUBTENUIS* Bailey. Berkeley and Hampshire Counties, Pennsylvania and Kentucky.

Section SYLVATICI

80. *R. LACINIATUS* Willd. Collected in nine West Virginia Counties. Introduced from Europe, and established in many places.

BIBLIOGRAPHY

1. Bailey, L. H., "Species Batorum," *Genes Herbarium* 5: 1-932, 1941-45.
2. Bailey, L. H., "Species Batorum—Addendum I," *Genes Herbarium* 7: 181-349, 1947.
3. Bailey, L. H., "Species Batorum—Addendum II," *Genes Herbarium* 7: 481-526, 1949.
4. Core, E. L., "A Checklist of the Vascular Plants of West Virginia, 1950.
5. Davis, H. A. and Tyreeca, "The Genus *Rubus* in West Virginia—Preliminary Report", *Proc. W. Va. Acad. Sci.* 23: 37-43, 1951.
6. Fernald, M. L., "Gray's Manual of Botany", 8th ed. 1950.

WEST VIRGINIA UNIVERSITY, MORGANTOWN

New Plant Records for West Virginia*

EARL L. CORE and H. A. DAVIS

CLEMATIS ALBICOMA Wherry. This species, in Gray's Manual, 8th ed., is stated as occurring on "shaly barrens and slopes, W. Va. and e. W. Va.". Core (Castanea 17: 107, 108, 116, 1952) records collections from seven counties of Virginia and West Virginia, ranging from Montgomery County, Virginia, in the south, to Pendleton County, West Virginia, in the north. A collection by Mr. & Mrs. H. A. Davis (No. 7854) from near Petersburg, Grant County, West Virginia, May 19, 1946, therefore represents a northward extension of the known range.

ROSA ACICULARIS Lindl. Along trail at base of Ice Mountain, Hampshire County, Mr. & Mrs. H. A. Davis 4348, July 11, 1941. Fernald, in Gray's Manual, 8th ed., records the range of this species as "w. N.E. (local), e. N.Y., Mich., Wisc., Minn., S.D. and Colo." This collection thus represents a marked extension southward of the known range. The plant was growing in association with *Linnaea borealis*, *Cornus canadensis*, *Dryopteris disjuncta* and other boreal species. Although the elevation at this point is less than 1000 feet, the year-long presence of ice among the rocks of a great talus slope favors the growth of northern species.

OENOTHERA ARGILLICOLA Mackenzie var. *pubescens* var. nov. Haec varietas a forma typica speciei recedit capsulibus pubescentibus. Great Cacapon, Morgan County, Mr. & Mrs. H. A. Davis 3084, July 27, 1939. In the original description of the species (Torreya 4: 56, 1904), Mackenzie states "capsules perfectly glabrous". The specimen cited above differs from typical *O. argillicola* in its pubescent capsules.

*Contribution No. 67 from the Herbarium of West Virginia University.

NOTES and NEWS

A course in the Bryology of the Southern Appalachians taught by A. J. Sharp will be offered the first term (June 15-July 18, 1953) of summer school, The University of Tennessee, Knoxville 16, Tennessee. Additional details may be had by writing the secretary of the Department of Botany.

SPRING FORAYS OF THE CLUB—An ecological and taxonomic survey of the main plant communities in the North Carolina Coastal Plain region will be the objective in a field trip to be held by the Southern Appalachian Botanical Club in conjunction with the annual meeting of the Association of Southeastern Biologists. Participants will assemble at 8 a.m., Saturday, April 18, on the University of North Carolina Campus at Chapel Hill and will proceed to Carolina Beach, with stops at White Lake and Singletary Lake in the Carolina Bay region, and at the Big Savanna. One or more of the azalea gardens in the Wilmington region will be visited, as well as sand dunes and salt marshes. The trip will be led by Dr. B. W. Wells, assisted by Dr. R. D. Godfrey and Mr. Steve Boyce, of North Carolina State College, and by Dr. A. E. Radford of the University of North Carolina. The trip will end at noon on Sunday, April 19.

A wild-flower pilgrimage to the botanical collecting grounds of Lawrence William Nuttall (1857-1933), in Fayette County, West Virginia, will be held on April 24 and 25. The group will assemble at the Blume Motel at Lookout on the evening of April 24. An illustrated lecture will be given at the Nuttall High School in Lookout during the evening, with a trip to Nuttallburg, along the New River, scheduled for the next day. Requests for reservations at the motel should be addressed to H. B. Tully, Edmond, W. Va.; other information concerning the foray may be obtained from the Editor of *CASTANEA*.

BOOK REVIEWS

AN ILLUSTRATED STATE FLORA.*—Since many people find it easier to identify plants by comparison with pictures than to laboriously run them down through keys, illustrated floras prove especially useful and popular. The appearance of the first part of a new Flora of West Virginia, covering the Pteridophytes, Gymnosperms, and Monocots, is accordingly welcome, for in it nearly every taxon is allotted a line drawing on a page fairly close to its description. The arrangement and nomenclature are largely in accord with the 8th edition of Gray's Manual, although the authors have had the courage to deviate occasionally. The text comprises brief keys to genera and species, and well-summarized individual descriptions of these. There are added data on blooming-period, habitat, and distribution in the state by counties, with notes on features of special interest.

The illustrations are on the whole satisfactory, although several do not agree with the text-descriptions or are otherwise misleading. Especially in need of improvement may be mentioned the *Botrychium* (p. 11); *Dryopteris* (p. 15); *Pinus rigida* (p. 49—needles should be in 3s); *Elymus canadensis* spikelet (p. 149); *Tradescantia subaspera* and *Commelina communis* flowers (p. 211); *Allium allegheniense* (p. 233—described as urn-shaped, shown as campanulate); stamens of Lilies (p. 235); and details of *Spiranthes* (p. 267); it may be added that the species epithets of the two *Listeras* on p. 269 are reversed.

References are given here and there to literature bearing on certain taxa, but it would have been helpful if more in the way of synonymy had been included. Various plants newly discovered or geographically expanded in West Virginia, and in the past written up under one name, are here listed under wholly new names, which is confusing to the non-professional botanist. And again, in cases where there are differences of opinion as to identity, only one viewpoint is presented, by the use of a single name. Examples are: *Wood-sia appalachiana*, heretofore always written upon as *W. scopulina*; and *Abies balsamea*, which is represented in West Virginia by a taxon

*Flora of West Virginia. (Part 1). P. D. Strausbaugh and Earl L. Core. 273 pages. West Virginia University Bulletin Series 52, No. 12-2. \$1.00 Morgantown, West Virginia. June, 1952.

unlike the type, named by some workers *A. b.* var. *phanerolepis*, by others *A. intermedia*.

In spite of these shortcomings, this work is to be classed as one of the best modern state floras yet published.

EDGAR T. WHERRY,
UNIVERSITY OF PENNSYLVANIA.

THE NEW BRITTON & BROWN.*—The long-awaited third edition of the new *Illustrated Flora* has finally been published by the New York Botanical Garden, under the authorship of Dr. Henry A. Gleason. Those who for many years have leaned heavily upon the second edition of this well-known work for the identification of native plants of the northeast will welcome the appearance of the new edition, which seems to maintain the high degree of scholarship characterizing the earlier ones.

The area covered by the present edition is somewhat smaller than that of the previous editions, being restricted both to the west and to the north. The territory extends westward to the western boundaries of Missouri, Iowa, and Minnesota and northwards to the 47th parallel of latitude across Ontario to the St. Lawrence River, thence including all the mainland south of that river. The total number of species described is 4660, as compared with the second edition, which included 4666 species.

The format of the volumes remains the same as in the previous editions, but the arrangement of the illustrations differs markedly. These are grouped with several species being represented on a plate which covers all or most of a page, instead of being adjacent to the description of the species, as in the first and second editions. This type of arrangement is not so convenient for consultation, although the illustrations are quite good and in general it is not necessary to turn a page in order to consult them.

Keys and descriptions are very complete and detailed. In marked contrast to Edition 2, many specific entities are included and described, some of them apparently for the first time, although no Latin diagnoses are presented. The full synonymy and citations to literature that characterized the previous editions are lacking here and will be missed by many botanists. Another feature of Edition 2 not carried into Edition 3 is the wealth of English names. Many genera and species of the new edition receive no English names at all.

The conservative approach to family and generic entities will

certainly be much less disturbing to "the interested laity" for whom the new edition was prepared than was Edition 2. Those who attempt to check plant determination by reference to both *Gray's Manual* and the *Illustrated Flora* will find much greater uniformity in the use of the scientific names. All in all, the three new volumes promise to be of the utmost value to botanists of the northeast for many years to come.—EARL E. CORE.

*The New Britton and Brown Illustrated Flora of the Northeastern United States and adjacent Canada. Henry A. Gleason. 3 vols. \$30. 1952. New York Botanical Garden, New York, N. Y.

MOSES OF WESTERN PENNSYLVANIA.¹—As the first edition of this Manual (1913) has been out of print for several years, students of bryology welcome the appearance of this revised edition. It has the same general format as the first edition, the type being somewhat smaller but definitely clearer, and even though this volume contains considerable additional material, the total pagination, 396 pages, is a reduction of 33 pages over the earlier edition.

The frontispiece consists of a map showing the counties of western Pennsylvania, and also adjacent counties of New York, Ohio, West Virginia, Maryland, and Virginia, depicting glaciated areas, sand plains, uplands, valleys, etc. The introductory pages include a brief sketch of the general life history of a moss, a few paragraphs on the general topography of the region, and directions for collecting, preparing, and preserving specimens of mosses.

The taxonomic sequence and the characterization of the various orders, families, and genera follow closely the standard work of Engler and Prantl, *Die Natürlichen Pflanzenfamilien*. Regarding nomenclature, in the preface of the first edition the statement was made that the principle of priority had been followed without exception, dating from Hedwig (1801), and a few new combinations had been found necessary. "During the thirty-eight years which have passed since the first edition of the manual was prepared, bryology has advanced to the point that many changes in nomenclature have become necessary in order to bring this second edition up to date."

The total number of genera and species recognized in this Manual as having been collected or authoritatively reported in western Penn-

¹A Manual of the Mosses of Western Pennsylvania and Adjacent Regions. 2nd ed. O. E. Jennings, Director Emeritus, Carnegie Museum. The American Midland Naturalist, University of Notre Dame Press, Notre Dame, Indiana. Monograph No. 6. Sept. 1951. 396 pp.

sylvania is as follows: 113 genera and 286 species. Of these, 243 are illustrated by original drawings by the author from collections made in western Pennsylvania. In the present edition eighteen plates have been added covering forty-six species, and bringing the number of individual figures to a total of 3,517. These constitute seventy-two masterful plates which appear at the back of the Manual.

A comprehensive analytical key to the genera of mosses (dichotomous in most part) covers ten pages. In the body of the Manual, in the proper sequence, there occur technical descriptions of orders, families, genera, and species. Under each family there is a key to the genera, and under each genus, a key to the species if more than one is represented. The description of each species is accompanied by a statement of its habitat and its general distribution throughout the world and in North America, with notes regarding its occurrence, frequency or rarity, in Pennsylvania.

The illustrations are among the best we have available of the species illustrated. They were painstakingly and accurately made, most of them with the aid of a camera-lucida. The Manual contains an adequate glossary of bryological terms and a workable index of plant names, both page and plate numbers included.

Dr. Jennings' manual is a scholarly comprehensive treatment of the mosses of the region represented. It is well indexed and excellently illustrated. It is organized so as to be readily usable to the student who would identify mosses, particularly if the specimens are in fruit. It is conceivable that its use would have been extended had greater use been made of vegetative characters in a number of the keys. Nevertheless, to the bryologists of the Mid-Appalachians, this Manual is a most valuable contribution.—NELLE AMMONS, WEST VIRGINIA UNIVERSITY.

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